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ABSTRACT

Because of their proximity to local districts and state and local funding, regional educational service agencies (RESA's) and their staffs of linking or change agents are key tools in communicating new knowledge for educational improvement. This paper explores factors promoting knowledge sharing by distinguishing among knowledge bases (research, craft), purposes for use (technical, political, enlightenment), and ways knowledge is shared (informing, skill developing, implementing), and by discussing areas that may aid in understanding knowledge sharing's breadth: job characteristics, background, networking behavior, district characteristics, and RESA behavior. A knowledge exchange survey involving 23 RESA's and 345 district administrators reveals that use of RESA's varies markedly. Implications of findings are important for future research. A three-page bibliography is appended. (KS)

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EDUCATORS AND EXTERNAL ASSISTANCE: FACTORS INFLUENCING BREADTH OF KNOWLEDGE SHARING

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Educators and External Assistance:
Factors Influencing Breadth of
Knowledge Sharing

Abstract

Educators often search for new knowledge. This activity, which frequently involves the use of external assistance agencies, is important because it can lead to improvements and helps to cope with external pressure to reform. Yet, little is known about the factors that promote a breadth of knowledge sharing. This paper used survey data from 345 school administrators to measure breadth of knowledge sharing and contributing factors. Key variables include the networking behavior of educators, their organizational position, and the behavior of the assistance agency. Implications of these findings for policy and research are discussed.

EDUCATORS AND EXTERNAL ASSISTANCE:

FACTORS INFLUENCING BREADTH OF KNOWLEDGE SHARING

Educators often search for new knowledge. While this search is not a time consuming activity (Firestone, Wilson, & Rossman, 1983), it can lead to important improvements in educational services and helps to cope with external pressures to reform (Louis, Rosenblum, & Molitor, 1981). A good deal of this search takes place in assistance agencies such as regional educational service agencies (RESAs). Because this search behavior can lead to improvements in education, it is important to understand both which educators look for new knowledge and what policies and activities facilitate this search. To explore this issue, a survey was conducted of educators who use RESAs, agencies located between state and local education agencies in 39 states (Stephens, 1979). These agencies have grown to become a major source of knowledge for educators. The following sections first describe the importance of understanding how agencies help educators find knowledge and clarify key concepts. That is followed by a description of the methods of this study and results.

Understanding Knowledge Sharing

This research is part of a larger project to examine how the assistance and enforcement efforts of RESAs promote knowledge use and program reform in schools. An earlier paper examined the problem of combining enforcement and assistance strategies (Firestone & Wilson,

1983). This one focuses on how assistance efforts promote sharing of knowledge with local educators. This section explains the importance of understanding how RESAs facilitate educators' search for knowledge, explicates what is meant by sharing knowledge with educators, and identifies five factors that might affect that process.

The Importance of Knowledge Sharing

Given the importance of new knowledge a key question is: How does one best communicate that knowledge? Human linking or change agents are a key tool in this process. That has been supported by a growing body of research evidence. One of the first efforts to document the role of change agents was offered by Rogers and Shoemaker (1971). They stressed the importance of change agents in the dissemination of information from one organization to individuals or community groups. This initial focus on case studies of the introduction of new technologies to rural communities and developing nations was expanded by the work of Louis (1977) who studied the impact of linking agents in a federal program designed to increase the use of educational research among local practitioners. She found that linking agents who were housed in state departments of education were successful when they actively publicized their program, developed intensive relations with clients, and provided help both before and after requests for information were made.

Two more extensive, recent studies of educational change efforts provide more evidence for the positive role of the human linking agent. The Research and Development Utilization (RDU) study (Louis, Rosenblum, and Molitor, 1981) was a review of the operation of seven networks

designed to make national, state and other assistance sources available to local educators. Representatives of these networks took educators through a problem-solving process that helped them identify, implement and incorporate research-based innovations. The evaluation of the project indicated that half of the participating schools incorporated either a research-based product or a systematic problem-solving process and had one substantial spin-off effect while only ten percent were characterized as failures. An important factor contributing to these successful outcomes was the quantity and quality of external assistance. The second study, a survey of Dissemination Efforts Supporting School Improvement (DESSI), examined the implementation of innovations in 146 schools (Loucks, Cox, Miles, Huberman, and Giseman, 1983). These innovations were disseminated through four strategies: interpersonal linkage (using the National Diffusion Network), commercial marketing, state administered dissemination, and local development and invention. Both regression analyses across the full sample of schools and an ethnographic study of 12 schools indicated that external assistance was especially helpful in bringing about major changes.

These human linkers who have been a key tool in the process of knowledge dissemination are more successful when they have easy access to schools. There is ample evidence that having an organizational base close to the client improves the potential impact of the linker (Louis, 1981; Yin and Gwaltney, 1981; Louis and Sieber, 1979). One type of agency close to local educators is the regional educational service agency (RESA), an organization that exists between the state and local level for the purpose of facilitating communication between levels and providing assistance to

schools. Yin and Gwaltney (1981) offer five important reasons why RESAs and their staffs of human linkers are such a potent source of knowledge dissemination. First, since RESAs usually serve a number of individual school districts they can offer an economy of scale that is unmatched by individual service delivery. Second, since RESAs exist in various forms across 39 states they offer broad applicability without the creation of new organizational structures. Third, because of their proximity to local districts they have developed a service orientation unmatched by many other agencies. Fourth, most RESAs are part of the educational system's intergovernmental structure and can therefore draw on political and bureaucratic legitimacy that outside organizations are unable to tap. Finally, RESAs are supported primarily by state and local funds, giving educators more of a sense of ownership regarding their activities.

This research uses data from local educators who were evaluating knowledge provided by RESAs to explore some of the factors that may promote broader exchanges of knowledge. The following section will describe what is meant by breadth of knowledge sharing and what factors might have an impact on knowledge sharing. The next part of the paper describes the methods employed in the study including the operational measurement of the variables. This is followed by a presentation of results and a discussion that draws implications for practice and future research.

Breadth of Knowledge Sharing

Knowledge sharing is a complex process. The aspects of knowledge sharing that we explored can be clarified by distinguishing among bases for knowledge, purposes for knowledge use, and ways knowledge is shared.

The most frequently considered knowledge base is research. Research-based knowledge is knowledge that has been generated through scientific inquiry. The form that this knowledge takes is often a scientific report which has been commissioned to elicit solutions to a clearly recognized problem. However, as Louis (1981) points out, the conceptualization of knowledge as research-based leaves out an important aspect of knowledge frequently shared by educators. That knowledge is craft-based and derives from the experience of individuals who are involved with educational practice. The perspective taken in this paper is that any useful understanding of how knowledge is used in education must include both craft- and research-based knowledge.

What makes knowledge so complex is the multitude of purposes it serves. Early conceptualizations focused on a linear model of use that assumed knowledge was used to solve discrete technical problems. In that model the user was viewed as having a clear, identifiable problem. To solve the problem the user reviewed available knowledge, chose that which was most appropriate for the solution and made decisions about what to do based on the knowledge. However, recent research points to the limitations inherent in the linear problem-solving model. Studies document the neglect by policy makers of specific research findings (Caplan and Barton, 1978; Rich, 1975). Weiss (1980) also provides convincing evidence that decisions are rarely "made" in a clear-cut fashion but rather "accrete"

through small uncoordinated efforts made by many actors. She also suggests that single research studies are rarely used in a tightly rational manner to inform decisions. Instead, ideas and generalizations from a multitude of sources "creep" into decision-making activities.

While the linear use of knowledge to solve technical problems is fairly rare, Weiss (1978) suggests several other purposes that knowledge serves. Two that have particular relevance to this study are the use of knowledge for political and enlightenment ends. In the former situation, advocates of a position marshall the arguments at their disposal and use them to persuade decision-makers or to neutralize opponents. Knowledge is also used to advance self-interest by delaying decisions, showing why expected results could not be attained, publicizing successes, and making the case for one's own indispensability. In the latter cases, knowledge is used to sensitize policy makers to some social problems, to invent problems, and to define others away. A knowledge base also gives policy makers a language that allows them to label and discuss assorted problems and solutions.

Finally, there seems to be a progression in the ways knowledge is shared. First, it informs the recipient. In this case the recipient becomes aware of new concepts, opportunities, problems, or solutions. Action may or may not be taken, and decisions may or may not be made. Second, the recipient may develop new skills to do something. Skill development is more complex than simply receiving information because the recipient now actually has the capacity to do something differently. Finally, the information or skills can be implemented. In that case, the recipient actually makes the decision to use the information or skill in

some way. Although a complete examination of knowledge sharing should examine both skill building and implementation, this study is limited to the sharing of information.

Factors Affecting Breadth of Knowledge Sharing

Since this research was viewed as exploratory, no formal hypotheses were tested. Rather, a review of the educational change literature as well as insights gained from discussions with linkers and educators in the field offered some tentative hunches about five potentially useful areas that might help explain breadth of knowledge sharing. These areas include: job characteristics, personal background, networking behavior, perceived district characteristics, and perceived RESA behavior. Each of these is discussed separately with an explanation of what each means and why it makes a difference.

Job characteristics refer to the formal roles and responsibilities that come with the occupational assignment. The importance of job characteristics highlight the fact that certain jobs give people broader access to external knowledge than others (Fullan, 1981). Those in positions of authority may have more need for knowledge and may have more discretionary time to seek out the contacts. As Morris, Crowson, Hurwitz and Porter-Gehrie (1982) point out, principals, as one level of administrator, are so involved with issues of organization maintenance that they have little time to devote to external knowledge. Job characteristics refer not only to formal authority but also to the degree of specialized, technical responsibility. The effect of specialization can be viewed from two perspectives. Those who are not specialists are most likely the ones with

the least knowledge and will need to seek it. On the other hand, specialists are in need of specific, technical knowledge and must search external sources for it.

Individual background characteristics refer to job-relevant educational and work experiences. The pioneering work of Rogers and Shoemaker (1971) on adoption of innovations points to the significance of individual background characteristics. Professional experience (Corwin, 1975) and formal training (Rosenblum and Louis, 1981) have been positively associated with innovative changes. That experience and training provide a base for knowing what knowledge is needed and where to search for it. On the other hand, while experienced educators may be more comfortable in need searching for new knowledge, there may be less incentive to do so. Young aggressive educators may have more to gain by looking for new ideas and trying them out. In addition, it has been argued that individuals who are more upwardly mobile and committed to their occupational skills and professional groups than to their employing organizations or regions are more likely to be involved in the search for external knowledge (Merton, 1968). The common label for individuals with those characteristics is cosmopolitan (Gouldner, 1957).

An obvious but often overlooked aspect of searching for knowledge is the communication pattern which is set up to transmit the flow of knowledge. As Havelock (1968) pointed out, the knowledge transfer process cannot be understood simply by studying the situation of knowledge senders or receivers, one must also know something about the medium of communication. The networking behavior of an individual is defined as the communication or contact with others. Networking, then becomes the medium by

which knowledge or information is shared. For there to be breadth of sharing there has to be some communication. A more open communication pattern where colleagues talk frequently with one another and outsiders has been linked to increased adoption of innovations (Baldridge and Burnham, 1975) as well as improved schools (Little, 1982). Not only is it necessary for communication to flow freely among colleagues within a school district, but also between the RESA as knowledge broker and the local educator.

In addition to the exploration of individual characteristics, recent research suggests that organizational factors will influence knowledge sharing (Baldridge and Burnham, 1975; Rosenblum and Louis, 1981). This paper investigates the effects of district characteristics on knowledge sharing. For there to be a breadth of knowledge sharing there must be structural arrangements that encourage knowledge exchange. Rosenblum and Louis (1981) found that physical isolation was associated with quality of implementation of innovations. School systems that were isolated from external assistance were less likely to make changes. Peters and Waterman (1982) in a study of successful businesses also stress the significance of the organization's attitude toward employees who seek new knowledge. Where there are district practices that encourage educators to learn what RESAs have to offer there may be greater breadth of knowledge sharing through that agency.

Not only is it important to evaluate the perspective of the district, one must also take into account the appropriate role of the RESA and its staff. Louis, Rosenblum and Molitor (1981) point out that a key element in the relationship between school districts and external agencies is the

role of the field agent in the external agency. Where there is a match between what the field agents do and what local educators want them to do knowledge sharing should be more successful.

In addition to field agent roles there is the attitude that the RESA takes to service delivery. Firestone and Rossman (1983) offer three alternative postures. One extreme is the authoritarian RESA that makes a unilateral decision about the services it will offer and then displays a take or leave attitude toward its clients. The middle of the road position, laissez-faire, waits for schools to make requests and then the RESA responds as best it can. The marketing strategy, on the other hand, is more aggressive about sensing the needs of clients and structuring services to meet those needs. Each of these positions has different implications for responsiveness to local concerns. A more responsive approach should encourage broader exchanges of knowledge.

These broad strategies for service delivery are also subject to important differences in implementation tactics. It may not be enough to emphasize the technical skills of those delivering services, it is also important to consider the personal integrity of the person delivering them. Firestone, Rossman and Wilson (1983) note that mutual knowledge, trust, access, and delivery of on-target services are all critical to successful collaboration.

Study Design

To explore the factors that contribute to the breadth of knowledge sharing a survey strategy was adopted that focused on the set of knowledge flows between RESAs and local educators. This survey approach was chosen

as a complement to the two standard designs chosen for many studies of knowledge sharing. The case study approach (e.g., Yin and Gwaltney, 1981) allows for an intensive sampling of a few key sites, but does not allow for a full evaluation of the diversity of relationships that exist in the phenomenon under consideration because too few instances are examined. The other alternative, the empirical exploration of the universe of knowledge exchanges among organizations (e.g., Galaskiewicz and Marsden, 1978) sacrifices any depth of measurement of what transpires within a given set of relationships in order to increase the number of instances (Hall, Clark, Giordano, Johnson and Van Rockel, 1978). To maximize our understanding of the knowledge exchange between external agencies and educators an intermediate ground was chosen where enough sites were chosen to represent the full range of relationships but not so many that important compromises were forced on the measures because of response burden.

Twenty-three RESAs were selected from Pennsylvania and New Jersey. These 23 represent 44 percent of the population of RESAs in the two states. The choice of the 23 was made after consultation with state department of education staff and RESA directors to ensure variation in size, population density, geographic distribution in each state, and reputation for helping educators use knowledge. Since the interest of the study was in elaborating the relationship between RESAs and local school districts, it was necessary to select districts where a reasonable degree of interaction with the RESA existed. RESA staff nominated 198 districts that were frequent users of their services (from a total population of 486 districts). A sample of sixty-eight districts was chosen that was

representative of the population of students being served within each RESA region.

While random sampling has advantages for certain types of research, this purposive sample was necessary to establish that at least some association between the RESAs and districts existed. A key informant within each district, the person identified by the superintendent as being most familiar with the RESA-district relationship, was asked to nominate a sample of administrators who had familiarity with RESA activities. A total of 345 district administrators, over 90% of the nominated list, completed the survey. The administrators included building-level principals as well as district-wide administrators and represented 32 percent of the population of administrators in the 68 district sample. The responses from these 345 school administrators represent the data base for this analysis.

Dependent Variable

Two standard techniques are adopted by researchers in an attempt to elicit responses from educators concerning their knowledge use (Thompson and King, 1981). The first involves a projective technique where respondents are given a series of carefully selected pieces of knowledge (e.g. research reports) and asked how likely they would be to use that knowledge in their work (e.g., Weiss and Bucuvalas, 1980). Several limitations of this approach restrict its utility. First, it only focuses on a single piece of knowledge, and most commonly, a very narrow one at that--research articles. Second, there is a strong normative orientation to the approach that may force a respondent to answer what ought to be used rather than

what actually is. Third, by asking someone to respond to what might be rather than what is/was, an even greater opportunity for pure guess work is introduced.

The second research strategy involves retrospective case studies (e.g., Alkin, Daillak, and White, 1979) where post hoc interviews are conducted with individuals in an attempt to recreate the knowledge and how it was used in making certain decisions. There are also several disadvantages with this approach. First, respondents are more likely to remember the limited but dramatic instances of knowledge (those associated directly with go/no go decisions) and forget the frequent but modest ones (Leviton and Hughes, 1979). Second, it is easier to focus on specific, instrumental use and forget political or enlightenment examples. Third, this approach places a premium on recall of knowledge from a concrete source (e.g., an evaluation report) at the expense of more generalized knowledge, particularly craft-based knowledge, that exists as part of a person's memory bank but the source of which has long since been forgotten. However, the major advantage of this approach has been to identify a set of activities associated with the knowledge.

This study takes advantage of these past efforts to focus on a series of knowledge sharing activities. Drawing on the work of Weiss (1977) and others and a panel of experts, we constructed a list of knowledge use activities and asked respondents whether the RESAs helped them to do those things. This strategy was chosen explicitly to get a measure of the use of both craft- and research-based knowledge. Moreover, the original list of activities was constructed to include problem-solving, political, and enlightenment uses of knowledge. The final list emphasizes problem-

solving and enlightenment uses. Reasoning that individual respondents would best be able to evaluate the contributions of the RESA, each administrator was asked whether their RESA provided knowledge in seven ways:

- Seek alternative solutions to problems.
- Keep aware of national trends and developments.
- Apply advanced research knowledge to current work.
- Identify opportunities for improvement in the district.
- Get information on what other educators in the area are doing.
- Identify what current needs or problems are in a classroom, school or district.
- Use information I have to advise colleagues.

The seven were chosen as representative of the uses practitioners make of knowledge. Using a dichotomous response, the number of favorable responses by administrators were summed to create a breadth of knowledge sharing score: the more frequently administrators acknowledged using their RESA as a knowledge resource, the greater the breadth of the inter-organizational knowledge sharing. The sample of school administrators varied considerably in their use of RESAs as a knowledge source. The scores were scattered across the entire range from a low of 0 (i.e., did not make use of the RESA for any of the itemized activities) to a high of 7 (i.e., used the RESA for assistance in all 7 activities). The overall mean for the sample was 5.04 (see Table 1). The challenge, then, was to explore factors which might help explain this variation. The next section outlines the explanatory variables explored in this study.

Table 1 about here

Independent Variables

The unit of analysis for this study was the individual. This focus draws on recent research (Firestone, Wilson, and Rossman, 1983) that indicates a strong individual component to the relationship between RESAs and local educators. The quality and stability of the service is keyed to the personal relations between staff on both sides. Mutual knowledge, trust, access and delivery of on-target services are all impacted by the association of individual school people with the individual RESA field agents. Even in those situations where district or RESA characteristics were being assessed, the focus remained on individual perceptions of organizational contexts. This perspective also relies on the assumption that school districts are loosely coupled systems (Weick, 1976) and that individual views of reality have an important impact on how people respond.

This exploratory effort combined hunches drawn from the change literature with the researchers' experience in the field to operationalize several measures within each category of factors that might be associated with breadth of knowledge sharing. The multiple indicators for each factor are discussed below with summary statistics for each variable presented in Table 1.

Job Characteristics. Two variables were operationalized in this category. The first is position. Three categories were used: superintendent, district-wide administrator (e.g., assistant superintendent, curriculum supervisor, or program director), and building-level principal. There were 42 superintendents who completed the survey with the remainder of the sample split evenly between principals and other district-level administrators (see Table 1). The second variable, specialization, measured the degree of content specialization. Respondents were asked how often they worked in each of five content areas: curriculum, administration, special student groups, evaluation, and state regulations. Responses were combined to form an index of specialization with those who worked in only one area are defined as specialists (score of 1.0) and those who allocated equal time across all content as generalists (score of 0.2). Administrators were spread across the entire continuum but the distribution was skewed to the generalist end (mean = 0.31).

Personal Background. Three personal background characteristics were measured. One dealt with formal training while the other two measured professional experience. Formal training was assessed in terms of degrees earned by respondents; six percent of the administrators reported BAs as their highest degree, 70 percent had earned MAs, while 24 percent had obtained EdDs. Experience was operationalized both in terms of amount and location. Administrators were asked to report the number of years of full-time professional experience. The sample clearly had a great deal of experience having a mean of more than 20 years. Location of experience was conceived as a proxy for cosmopolitanism. Respondents were asked to report the number of years teaching in their geographic region and outside

the region. A ratio was computed of within region minus outside region experience to total experience. The scores ranged from high cosmopolitanism, -1.0 (all outside region), to high localism, +1.0 (all inside region). Administrators were spread throughout the continuum with the distribution skewed to the local end (mean = 0.57).

Networking Behavior. Networking was defined as communication or contact with others. Four specific measures were adopted in this research. The first two refer to general work-related discussions with colleagues in the district and outsiders, while the latter two focus on specific RESA contact. To assess communication patterns within a school district, or internal communication, administrators were asked to report their frequency of communication with four categories of colleagues (superintendent, other district-wide professional staff, principals, teachers) about professional matters. There were eight response choices ranging from never to several times a day. A mean for the four combined categories was computed. This score represented an internal communication index with a reliability coefficient of .57. All communication with professionals not employed in the same school district was defined as external. An external communication measure was created by assessing the frequency of communication (reported on a five point scale) for training, technical assistance, or information across five different areas (curriculum, administration, special student groups, evaluation, state regulations). Five external sources were identified (neighboring districts, professional associations, RESAs, local colleges, state department) and the communication was summed across the five sources and five content areas. Administrators were also asked to report the frequency of contact

with professionals in their district across the five content areas. A ratio of external to total communication (external plus district) was computed with respondents distributed across the continuum from no external communication (0.0) to exclusive use of external sources (1.0). The mean response was a balance between external and internal sources.

Networking specifically with the RESA was also examined in this study. Contact with the RESA can take several forms from brief telephone calls to long-term projects designed to implement major changes. The two most widely encountered forms of contact were the telephone conversation and workshop presentations sponsored by the RESA. Both are relatively short-term contacts; attendance at workshops averages a day or less. The respondents in the sample indicated that they were in contact with RESA personnel about once a week by telephone and that they attended between two and three workshops during the school year.

Perceived District Characteristics. In addition to individual characteristics or behavior on the part of administrators, respondents were asked about their district. Two variables were operationalized in this category. The first, perceived distance, was an indicator of isolation. Respondents were asked whether the physical distance between the RESA and the district was a help or hindrance (a five response scale from -2 to +2) in the personal receipt of knowledge from the RESA. Equal proportions reported that distance was a hindrance, made no difference and was a help. A second variable was a composite index of three items that measured district activities perceived by individuals as facilitating the knowledge search. The three items included the district's perceived openness to use of RESA services, district release time, and channels of

communications in the district. The three items had a reliability of .75 indicating their coherence as an index. The frequency distribution ranged across the entire continuum with the mean, 3.26, indicating a tendency to perceive the districts as more helpful than not.

Perceived RESA Behavior. Three variables were created in this category in an effort to operationalize role match and responsiveness tactics. Each variable taps individual administrator's perceptions of important aspects of RESA behavior. Within the mind of each individual who seeks knowledge from external sources is a set of perceptions about whether the external assistor can be of any utility. That utility is based on whether the efforts of the RESA are compatible with the individual's expectations.

The first variable operationalizes administrator's expectations about the tactics employed by RESA field agents to deliver services. These tactics include personal relations with people and modes of information dissemination, as well as appropriate technical expertise. It is not enough to have knowledge; it also has to be packaged, advertised, and delivered in a manner beneficial to the local administrator. These three items with response choices from -2 (hindrance) to +2 (help) formed the basis of an index that was labelled RESA capacity for individual assistance. Reliability estimates suggest this is a coherent single dimension with an alpha of .80. Overall, respondents perceived RESA tactics as more helpful than not with a mean of 3.09.

Another part of that perception of utility concerns whether the knowledge provider is performing the roles the school administrator expects him/her to perform. For the second variable eleven potential RESA field

agent roles were identified from earlier research (Firestone and Wilson, 1983) and each administrator was asked to indicate the extent to which the roles should be performed and actually were performed using a five point scale from not at all to a very great extent. The difference scores were averaged across the 11 items to obtain a single role discrepancy score. The larger the score the greater the perceived difference by school administrators between what RESA field staff should do and what they actually do. The single index measure had a reliability coefficient of .89. The frequency distribution indicated that district administrators almost universally perceived RESA employees as performing roles less frequently than they would have liked, but that difference was rather small (Table 1).

The final empirical indicator of perceived RESA behavior operationalized responsiveness to local needs. On the one extreme is the RESA that seeks out the needs of the school administrators and consciously makes those needs the basis for service delivery. On the other end is the RESA that independently decides what should be good for the client administrator and then sells that package to them. Responsiveness was operationalized by asking respondents to indicate what percent of their contacts with RESA staff were initiated by the local educator. The greater the local initiation, the more responsive the RESA was perceived to be. On the average, just over a third of the contacts with RESAs were initiated by local educators.

Results

Two steps were taken as part of the analysis. The first step was to evaluate the simple bivariate relationship of each independent variable with the dependent variable of knowledge sharing. This was done through the evaluation of Pearson product-moment correlation coefficients. The second step involved assessing the relative contribution of each independent variable to an explanation of breadth of knowledge sharing. This assessment was made by evaluating the standardized regression coefficients resulting from a multiple regression procedure.

The results of the first step are presented in the third column of Table 1. While Pearson r coefficients are the only ones presented, cross-tabulations with non-parametic statistics were calculated for all ordinal variables. These findings matched the ones using correlation coefficients. Therefore, to standardize the presentation, only the latter coefficients are printed. Two general themes emerge from the findings and are worth discussion here.

First, association of the independent variables with breadth of knowledge searching is very moderate. Just over half of the independent variables show a statistically significant relationship. There is no single, overwhelmingly powerful explanatory variable. Rather, the associations are quite small with no correlation exceeding .40.

Second, two categories of variables--district characteristics and personal background--are not associated with breadth of knowledge seeking. These data suggest that amount of formal training, cosmopolitanism (location of experience), and amount of experience have little impact of whether local educators engage or do not engage in knowledge sharing

activities with RESAs. Likewise, neither the perceived isolation of the district or an attitude of helpfulness on the part of the district plays a contributing role. On the other hand, all the networking variables and the three perceived RESA behavior variables make a significant contribution.

To assess the relative contribution of the eight variables that were independently associated with breadth of knowledge sharing, multiple regression analysis was used. Before this was done the correlation matrix of all nine variables was examined. The results reported in Appendix A suggest that there were eight separate factors being introduced. Since no conceptual arguments were made for the ordering of variables and since this was an exploratory effort, all variables were entered simultaneously. The value of this procedure is that it allows one to assess the effect of one independent variable on the dependent variable after controlling for the effects of the other independent variables. The statistic used to make that assessment was the Beta coefficient.

As can be seen from Table 2, three of the eight variables make a statistically significant contribution to an explanation of variance in breadth of knowledge sharing. One variable from each of the three remaining categories played a significant role. The evidence from these data suggest that increased knowledge sharing between external assistance agencies and local educators is associated with the administrator's position, his/her telephone contacts with the RESA, and the perceived role discrepancy between what the field agents in RESA should do and actually do. It is clear that knowledge sharing is structured by position; those with more authority on the district are more likely to receive a broader

range of knowledge or information. It is also true that those who keep in direct contact by telephone with the RESA are more likely to model a breadth of knowledge sharing. Most importantly, there is a strong relationship between perceived role congruence and breadth of knowledge sharing. When field agents are perceived as doing what local educators think they should be doing, there is increased potential for knowledge sharing.

Table 2 about here

Discussion

This exploratory effort to investigate factors that contribute to a breadth of knowledge sharing between educators and one kind of assistance agency, the RESA, offers ideas for future research. In addition, policy implications are derived for those who manage school systems or the organizations providing services to schools as well as those who establish linkage systems at the state or federal level. This final section of the paper outlines three directions for future research and three policy implications that follow from the results of the study.

The first implication for research revolves around the issue of generalizability. This paper has examined the exchange of knowledge or information between local educators and RESAs. That focus leaves open the question of generalizability of findings to other kinds of agencies. RESAs are only one of a pool of agencies with which educators exchange knowledge (Firestone, Wilson, and Rossman, 1983). The factors that impact

knowledge sharing with other kinds of agencies need to be explored before any generalizations can be made. Cates (1983) suggests that universities and teacher centers are two external agencies that may share some commonalities with RESAs with regard to the problems and prospects of collaborative arrangements with schools. Some additional candidates for future exploration might include professional associations, assistance-oriented state departments of education, colleagues in neighboring school districts, publishers, and independent consulting firms.

A second recommendation for future research centers on the concept of knowledge sharing. As suggested earlier, knowledge sharing is a complex process. The simplest form, that which was explored in this research, is knowledge as information where the educator becomes aware of new concepts, opportunities, problems, or solutions. This examination is of a limited range of knowledge uses. Future research efforts would profit from a broadened perspective that moves beyond a single aspect of knowledge sharing and looks at the interaction of multiple aspects. Knowledge as the development of new skills or as the implementation of new practices or programs has been offered as logical progressive steps in the ways of that knowledge may be shared. Some work on these lines has been done by Huberman (1983). More work needs to done to conceptualize both the forms that knowledge may take and the interplay among them.

Finally, this research measured the subjective, or individually perceived, perceptions of organizational and interorganizational factors that impact the knowledge sharing process. However, that perspective does not represent a complete picture. There are important objective characteristics of the organizations and the arrangements that exist

between them that have a powerful effect on the way knowledge is shared (Yin and Gwaltney, 1981; Louis and Rosenblum, 1981). Future research will profit from an investigation at the organization level of some of these important factors. In addition, there are objective environmental factors that may contribute to an understanding of the knowledge sharing process. A related set of analyses from this study indicate that the state context in which service is delivered plays a powerful role (Firestone and Rossman, 1983). A broader look at environmental influences, including community pressures for change, will enhance the understanding of this process.

Three policy implications derive from the empirical findings. The most significant finding, that congruence between what a field agent does and what the local educators wants him/her to do facilitates knowledge sharing, confirms a good deal of past thinking about the tactics of dissemination (Louis, 1981). Firestone and Corbett (1981) indicate that external linkers working in schools have a very weak role. Agencies that provide knowledge to educators are more dependent on educators than educators are on them. Since the pressures to seek knowledge can easily be outweighed by other demands, it is relatively easy for an educator to ignore the knowledge being offered. This is particularly evident when the delivery of knowledge is not compatible with the needs of educators. However, when the field agent combines professional and interpersonal expertise with a responsive attitude toward the needs of local educators the potential payoff is far greater (Firestone, Rossman, and Wilson, 1983). This suggests the need for a continual monitoring of both the

needs of the client educator and the activities of the field agent in an attempt to maximize the fit between the two.

Second, the power of the position of the educator receiving knowledge may have be an important limitation to potential utility of that knowledge. The payoff from most new knowledge about instruction must be seen at the classroom level. From that perspective teachers would be the prime client for dissemination activities. Yet, the findings of this study are that those furthest removed from the classrooms are the most likely targets of broad-based knowledge sharing. It becomes critical, then, to know if the knowledge flows to the classroom. Two fields of research provide varying degrees of optimism concerning potential impact at the classroom level. The first focuses on schools as organizations. If schools are fairly tightly coupled organizations, then one would expect that information coming in at the top would flow effectively down to the appropriate level. Yet, we know that schools are more appropriately regarded as loosely coupled systems (Weick, 1976; Deal and Celotti, 1981) and the what is learned in one part of the organization may not be communicated to another. For knowledge sharing to have a positive impact, careful attention must be given to ensure that it flows to the source where its impact may be most constructively felt. On the other hand, in the innovation literature, the work of Berman and McLaughlin (1979) indicates there are district environments receptive to change. These environments are characterized by the primacy of service over political concerns, mutual trust that facilitates internal knowledge sharing, sharing of power, and support for diversity. Under those conditions the potential for knowledge to flow to the classroom is greatly enhanced.

Finally, the importance of telephone contacts as an important factor in explaining breadth of knowledge sharing undoubtedly reflects the orientation to view knowledge as information rather than skills acquisition or implementation. Information is something that can be communicated quickly through brief contact while the other forms take more time. Nevertheless, this finding highlights the importance of an invisible communication network through which knowledge can be shared. The quality and stability of the knowledge delivered is keyed to the personal relations between staff on both sides (Firestone, Wilson, and Rossman, 1983). A mutual trust and confidence is built over a period of time. A key to the development of an ongoing relationship rests with an evaluation of past encounters. Since most of the contact is by telephone, the quality and quantity of those interactions play an important role in determining breadth of knowledge sharing.

Table 1

Summary Descriptive Statistics for Variate and Bivariate Relationship with Breadth of Knowledge Sharing

Variable	Mean	Standard Deviation	Association with Breadth
1. Breadth of Knowledge Sharing, 7 items	5.03	2.24	____
Job Characteristics			
2. Position (3 = Superintendent) (2 = District Office) (1 = Principal)	1.06	0.68	.30***
3. Specialization	0.31	0.11	-.09
Personal Background			
4. Formal Training (3 = EdD) (2 = MA) (1 = BA)	2.16	0.57	.09
5. Experience, Amount	22.59	8.31	.05
6. Experience, Location	0.57	0.60	-.03
Networking Behavior			
7. External Communication	0.51	0.20	.25***
8. Internal Communication	4.84	1.19	.22***
9. Workshop Contacts	2.65	2.52	.30
10. Telephone Contacts	23.97	27.36	.37***
Perceived District Characteristics			
11. Distance	0.22	1.27	.02
12. Helpfulness, 3 items	3.26	2.64	.09
Perceived RESA Behavior			
13. Role Discrepancy, 11 items	0.71	0.75	-.30***
14. Responsiveness	0.37	0.28	.16**
15. Capacity, 3 items	3.09	2.73	.32***

$.01 \leq p < .05$
$.001 \leq p < .01$
$.001 < p$

TABLE 2

Regression Analysis Results of Individual Level Variables on Breadth of Knowledge Sharing

Variable	Beta	F
Job Characteristics		
1. Position	.157	6.15*
Networking Behavior		
2. External Communication	.097	2.32
3. Internal Communication	.087	1.99
4. Workshop Contacts	.055	0.73
5. Telephone Contacts	.157	5.30*
Perceived RESA Behavior		
6. Role Discrepancy	-.232	11.80***
7. Responsiveness	.033	0.29
8. Capacity	.090	1.74

Multiple r = .51
F = 8.96***
N = 220

$.01 \leq p < .05$
$.001 \leq p < .01$
$.001 < p$

APPENDIX A

Correlation Matrix of Variables in Regression Analysis *

		1	2	3	4	5	6	7	8	9
1.	Breadth of Knowledge Sharing	----	.30	.25	.22	.30	.37	-.30	.16	.32
2.	Position		----	.11	.13	.21	.34	-.09	.20	.19
3.	External Communication			---	.02	.20	.24	-.11	.08	.17
4.	Internal Communication				---	.10	.26	-.07	.08	.03
5.	Workshop Contacts					---	.26	-.26	.11	.29
6.	Telephone Contacts						---	-.12	.25	.26
7.	Role Discrepancy							----	-.02	-.45
8.	Responsiveness								----	.13
9.	Capacity									----

*All correlations greater than .10 are significant beyond the .05 level.

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